



IR Jammer Kit

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TOOLS:

- [Soldering iron \(1\)](#)
- [Wire cutter/stripper \(1\)](#)



PARTS:

- [IR Jammer Kit \(1\)](#)
[product number MKAP01 from makershed.com. Comes with all the parts listed except the battery!](#)
- [Printed Circuit Board \(1\)](#)
- [Microcontroller chip \(1\)](#)
- [Chip socket \(1\)](#)
- [Push button \(1\)](#)
- [Capacitors \(2\)](#)
- [Capacitor \(1\)](#)
- [Diode \(1\)](#)
- [LED \(1\)](#)
- [LED \(2\)](#)
- [LED \(1\)](#)
- [Transistors \(2\)](#)
- [Voltage regulator \(1\)](#)
- [resistors \(2\)](#)
[brown black black gold](#)
- [resistors \(2\)](#)

red red black gold

- resistors (2)

orange orange black gold

- resistors (2)

orange orange brown gold

- Resistor (1)

brown black red gold

- Battery box (1)

- Adhesive foam (1)

- Battery (1)

(not included in kit)

SUMMARY

These directions were adapted from alan-parekh.com.

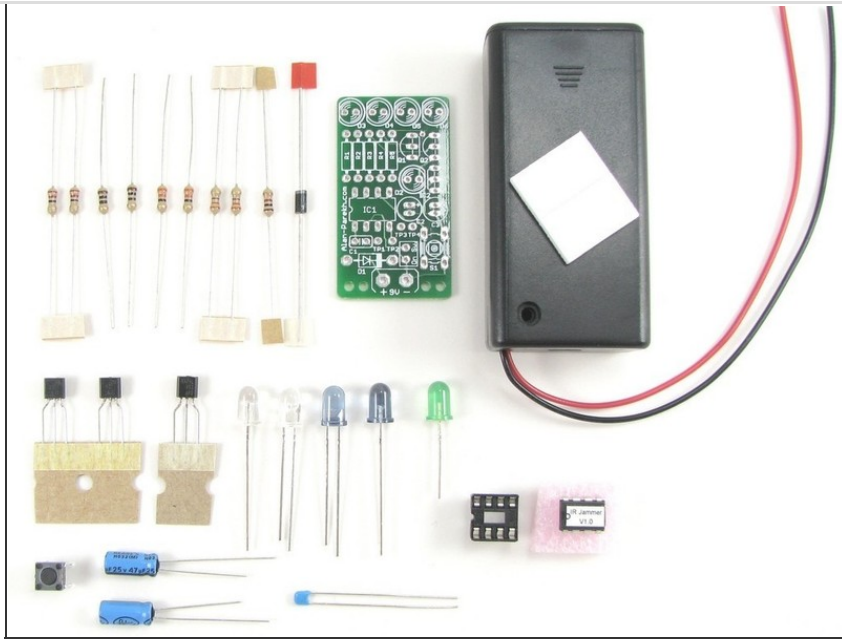
The IR Jammer project is microcontroller-based; what this means is there is a small self-contained computer that controls the unit. The IR Jammer will cause most infrared remote controls to stop working. This means that you could prevent someone from changing the TV channel or adjusting the volume on the stereo, etc. It does this by pulsing 4 high-power IR LEDs at specific frequencies that are used by most IR remote control systems. The frequencies configured are the 6 popular ones, 30kHz, 33kHz, 36kHz, 38kHz, 40kHz and 56kHz. Of course, this is harmless fun and when you turn the device off or point it away from the jammed device everything will be back to normal.



The operation is very simple: Just press the single button on the IR Jammer and it will blast IR frequencies for 30 seconds. Pressing the button again will add 30-second increments to the internal timer. So if you need to secretly prevent someone from changing the channel during the commercial you could hit the button 4 times to give you 2 full minutes of jamming.

Device Features

Small and compact; the physical size is the same as a 9-volt battery. This makes it easy to conceal. Universal coverage since it covers the 6 main IR remote frequencies. Most existing IR jamming projects only target one frequency. Easy to aim since there are 2 wide-beam IR LED and has good distance because of the 2 narrow-beam IR LEDs. Provides lots of non-destructive fun because when the jammer is turned off there is no damage to any of the systems that were jammed. Great project to learn soldering since all components are through-hole devices.

Step 1 — Unpack the parts.

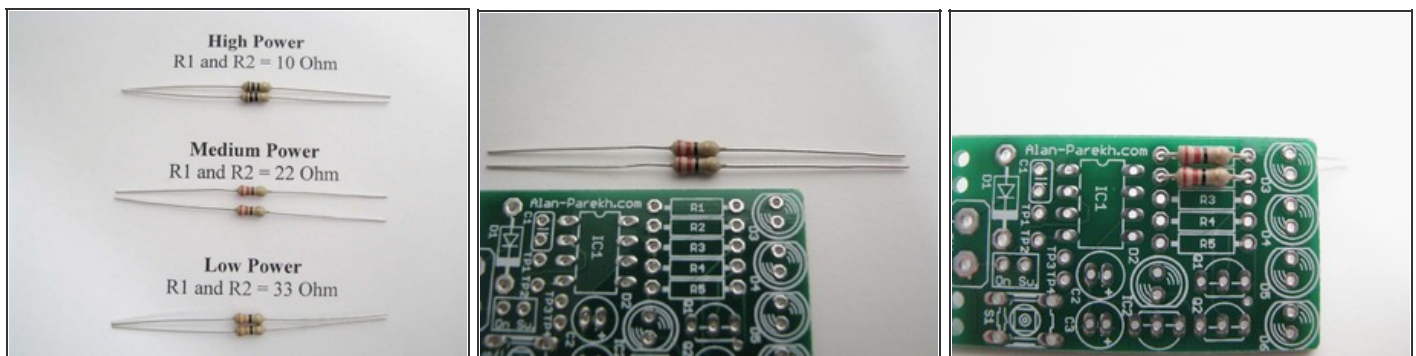


- Many of the components in this kit are sensitive to static discharge. Before you begin it is important that you remove any static electricity from your body by grounding yourself. This is simply done by touching any grounded metal that is by the area you are going to be assembling the board in. A bare metal computer power supply is an example of something that might be close at hand and provides a good ground point. 
- You must ground yourself again if you walk away and return to the location where you are assembling your control board. An antistatic wrist strap is a good investment if building many kits such as this one is in your future.
- Many of the components look similar but if installed in an incorrect location can cause damage to the control board or some components. It is very important to ensure that the components are installed in the correct position. We are going to start by installing the shortest components and progress to the larger ones. When the instructions say to “install” this means to place the leads through the required holes allowing the component to sit close to the board, soldering the 

component in place and trimming the leads.

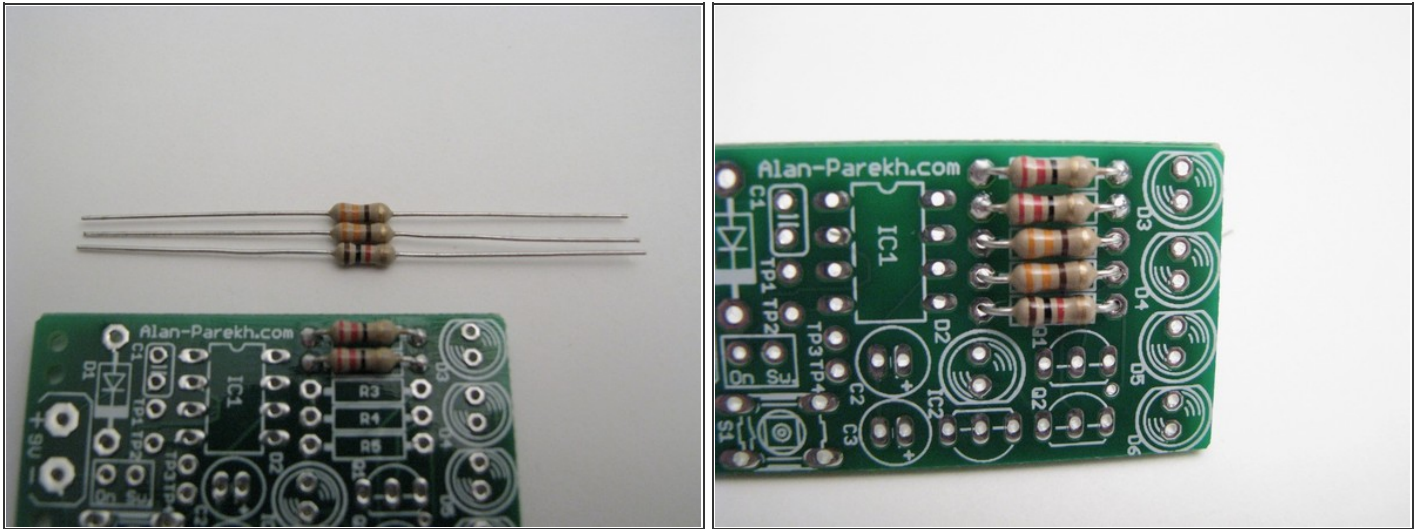
- If you have never soldered before it is recommended that some online tutorials are reviewed prior to putting this kit together.

Step 2 — Assemble the control board.



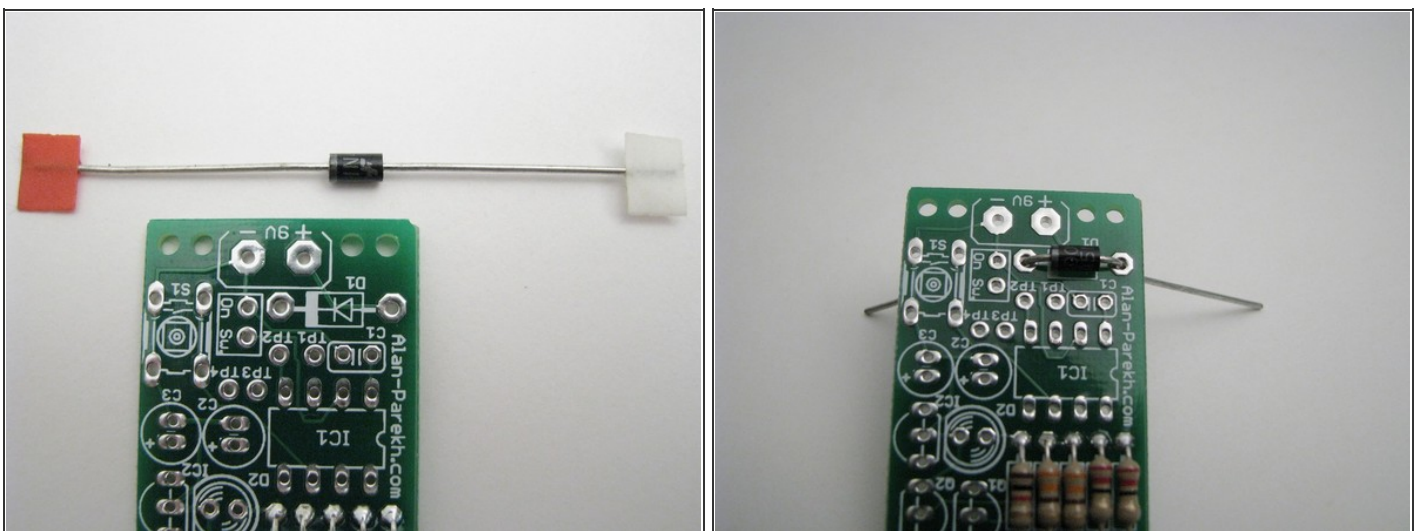
- **Select the IR jammer power.** You will need to select the resistors to be installed in location R1 and R2 based on how powerful you want the system to be. The more powerful the jammer is, the quicker it will kill your battery. If you are having a hard time deciding, select the 22-ohm (medium power). In the example pictures the 22-ohm resistors will be used. When in use these resistors can become warm to the touch; this is normal.
- **Install Power Selection Resistors.** Install the resistors R1 and R2 that were selected in the previous step. Resistors are non-polarized; this means that they can be installed in either direction.

Step 3 — Install remaining resistors.



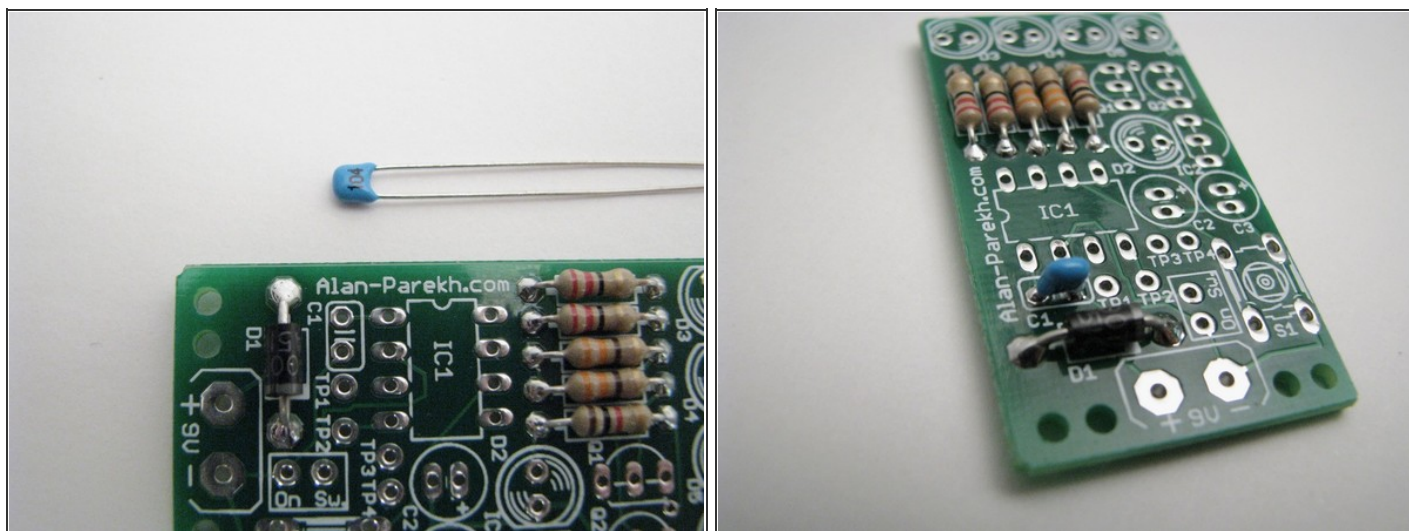
- Install a 330-ohm resistor in location R3. The color code for this resistor is Orange Orange Brown Gold.
- Install a 330-ohm resistor in location R4. The color code for this resistor is Orange Orange Brown Gold.
- Install a 1K-ohm resistor in location R5. The color code for this resistor is Brown Black Red Gold.

Step 4 — Install the diode.



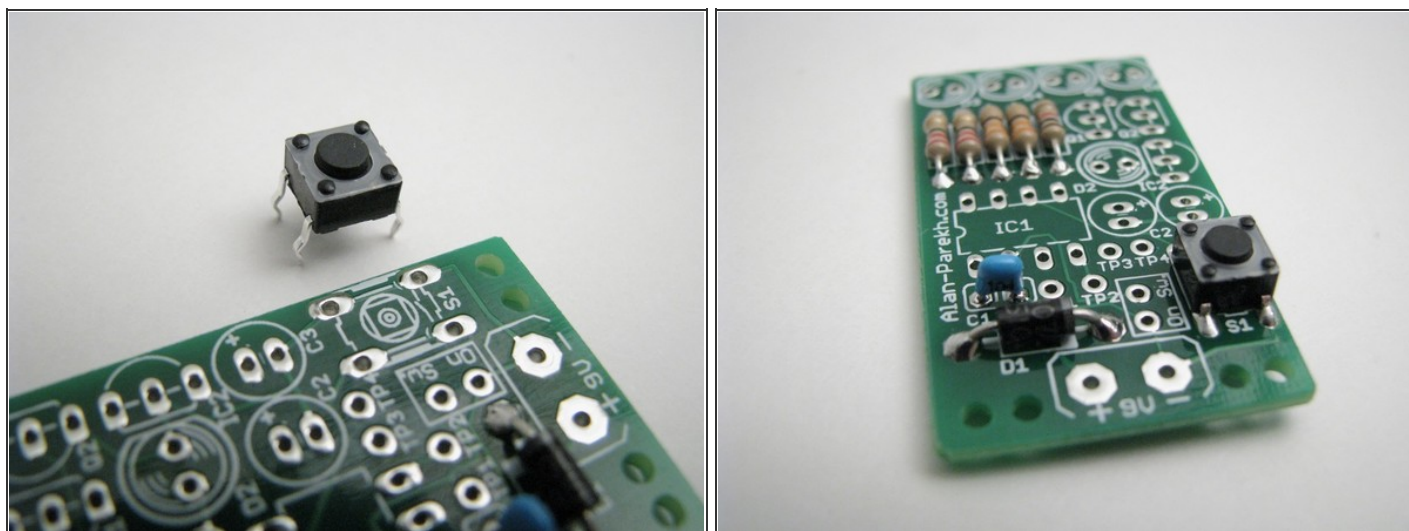
- Install the diode in location D1. Note that diodes are polarity-sensitive. The white stripe on the diode needs to be aligned to the white stripe on the circuit board.

Step 5 — Install the bypass capacitor.



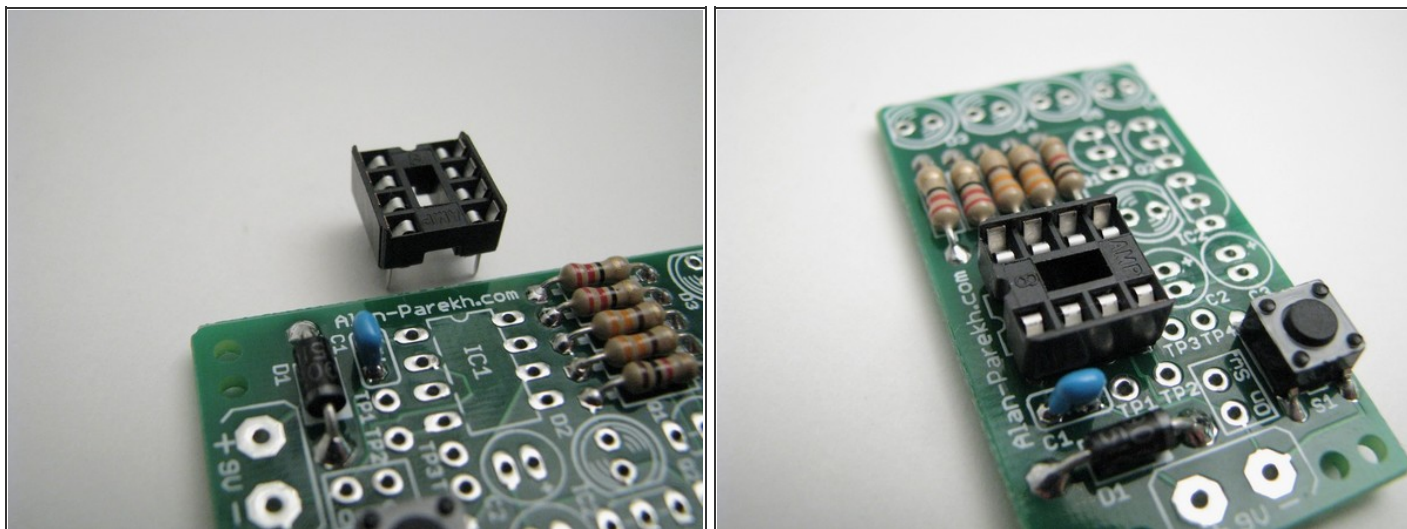
- Install the 0.1uF capacitor in location C1. This capacitor is non-polarized; this means that it can be installed in either direction.

Step 6 — Install the push button.



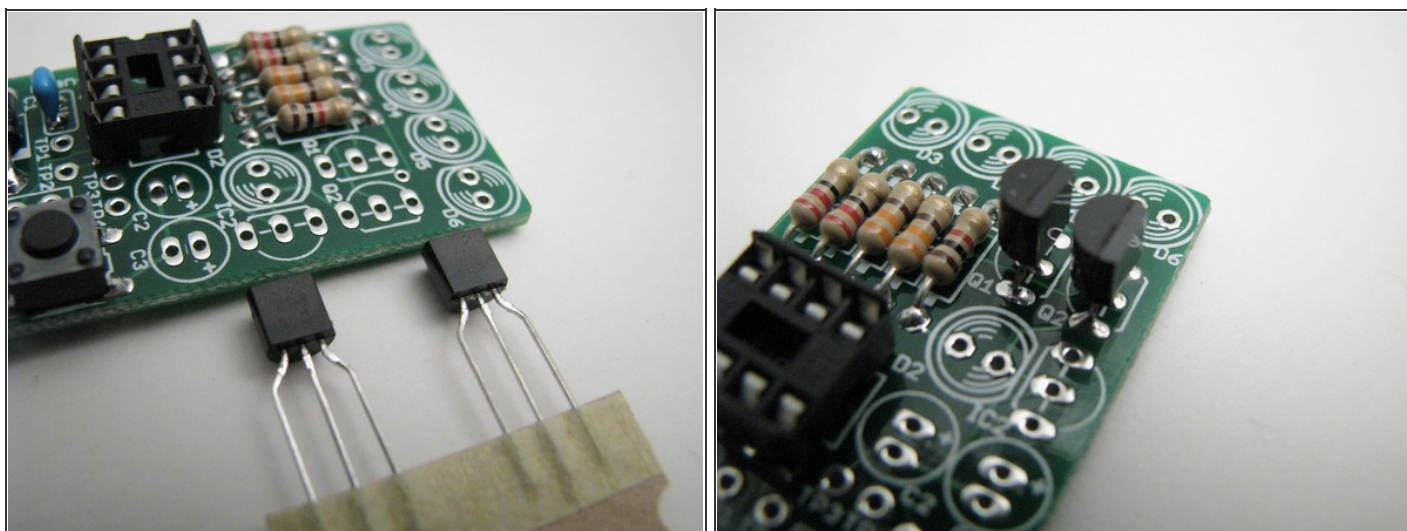
- Install the push button in location S1. The button needs to be installed as shown to operate properly.

Step 7 — Install the chip socket.



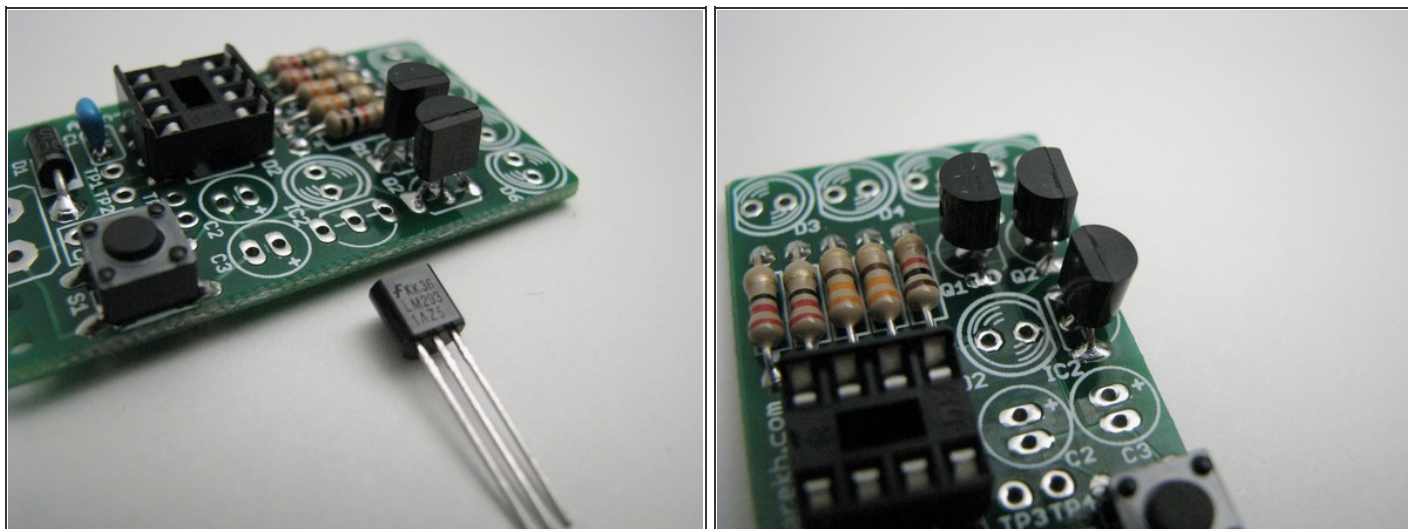
- Install the chip socket in location IC1. This is the designation for the microcontroller which will be installed into the chip socket later. There is a notch in the socket which needs to be aligned with the notch in the PCB silkscreen.

Step 8 — Install the transistors.



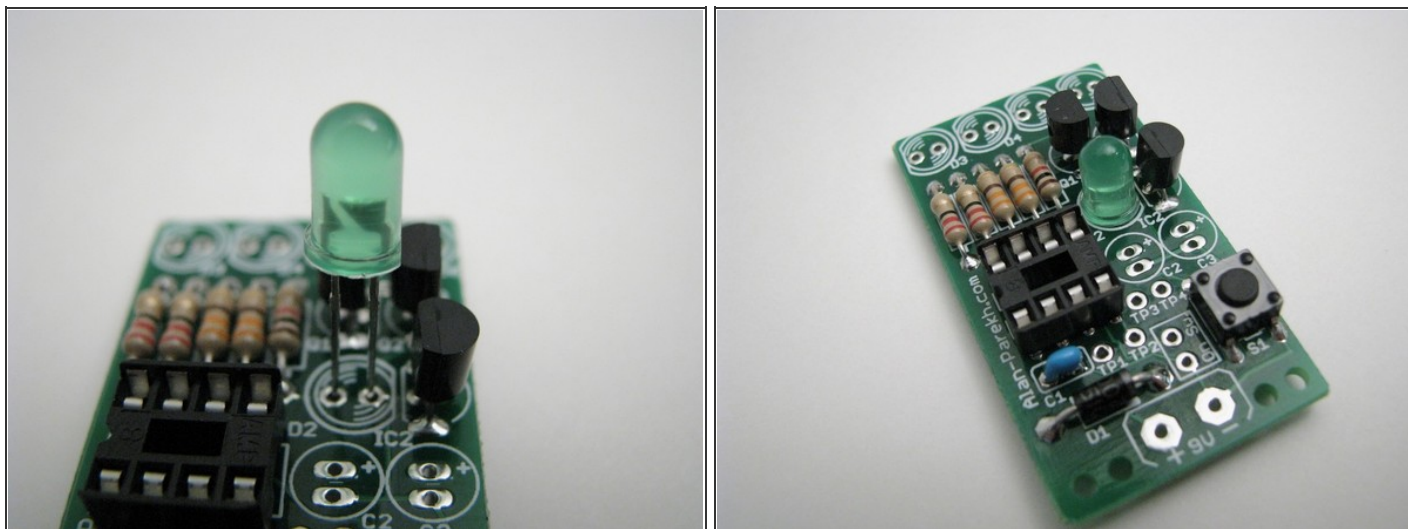
- Install the two transistors in locations Q1 and Q2. Align the rounded side of the transistor body with the rounded portion on the PCB silkscreen.

Step 9 — Install the voltage regulator.



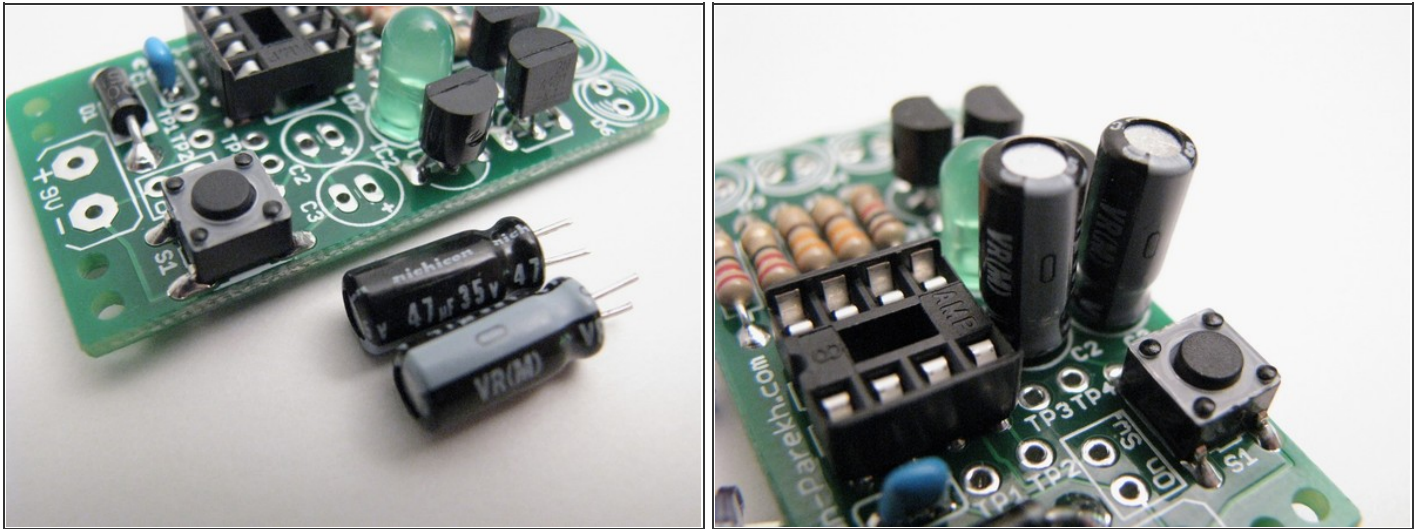
- Install the voltage regulator in location IC2. Align the rounded side of the voltage regulator body with the rounded portion on the PCB silkscreen.

Step 10 — Install the green LED.



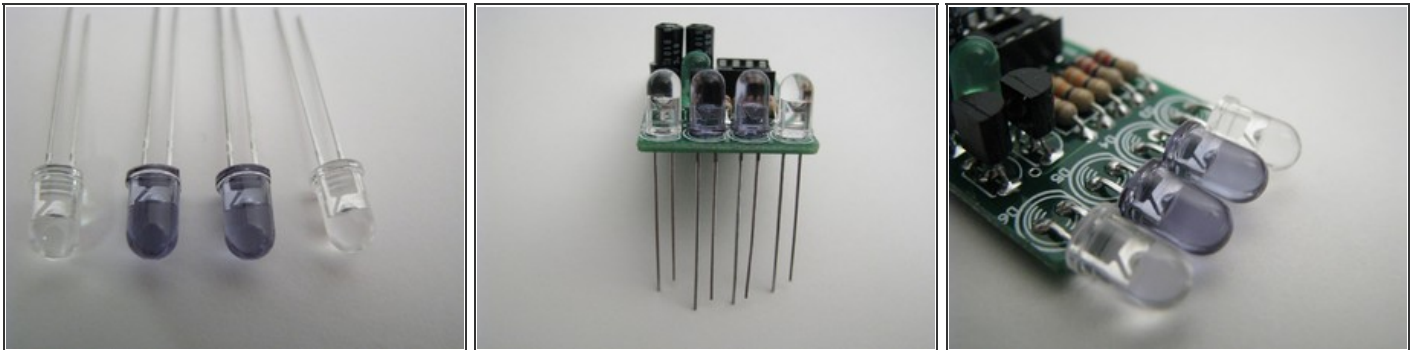
- Install the green LED in location D2. Align the flat side of the LED body with the flat portion on the PCB silkscreen. The short lead should be close to the voltage regulator.

Step 11 — Install the filter capacitors.



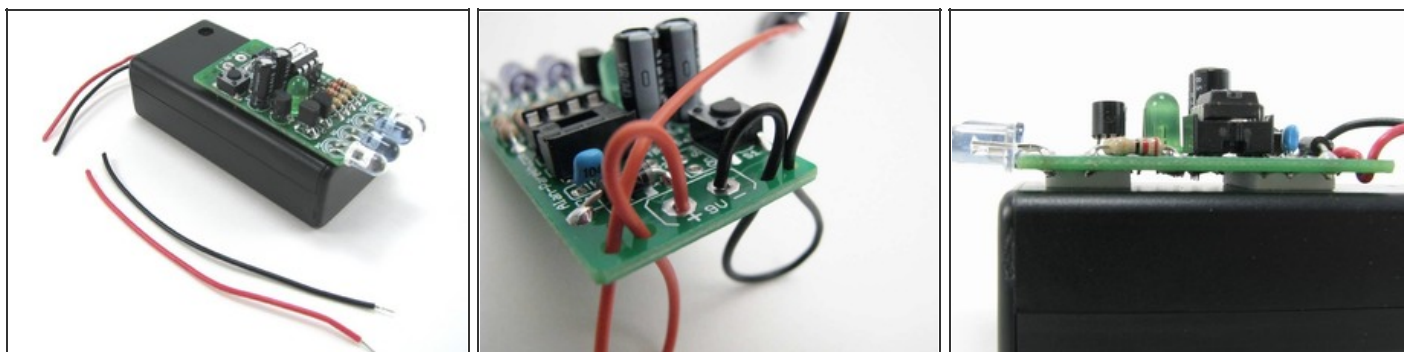
- Install the two 47uF capacitors in locations C2 and C3. Ensure that the polarity is correct. The silkscreen indicates the positive lead with a small + symbol and the capacitor has a negative stripe on one side. The negative stripe should be on the side opposite to the positive indicator on the board.

Step 12 — Install the IR LEDs.



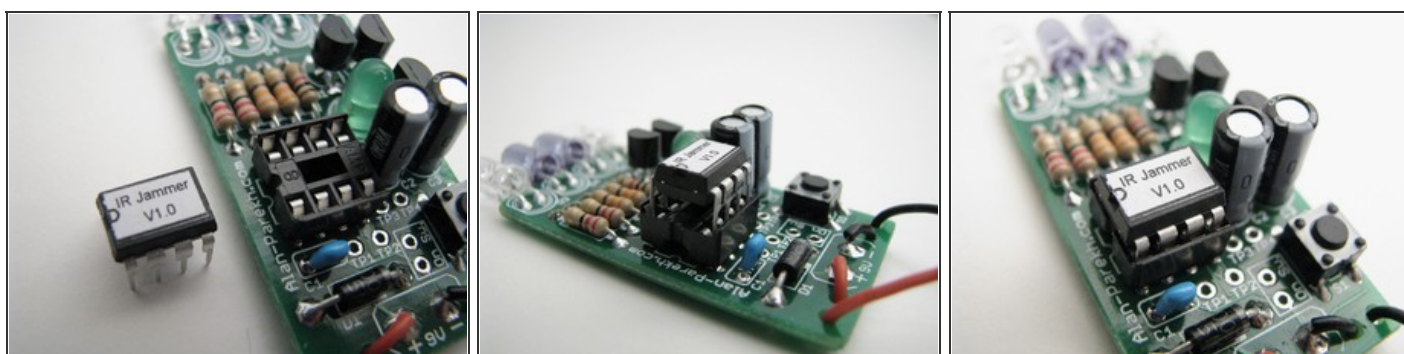
- Install the four IR LEDs. There are two narrow-beam IR LEDs, which have a light blue tint, and two wide-beam IR LEDs which are clear. Align the flat side of the LED body with the flat portion on the PCB silkscreen. The LEDs can be installed flush with the board or bent 90 degrees as shown.

Step 13 — Install battery box.

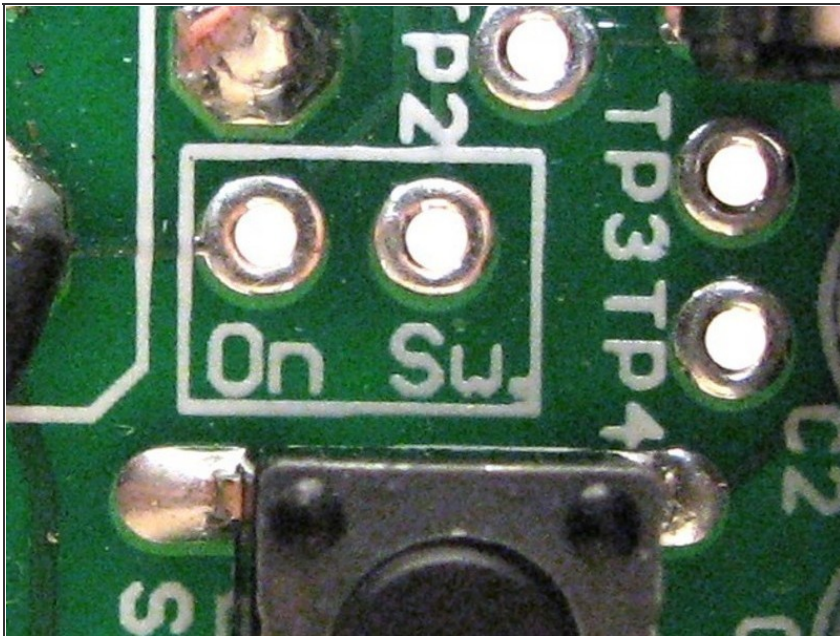


- Install the 9-volt battery box. There is a red lead to indicate positive and a black lead to indicate negative. Trim the battery leads a bit if desired and loop the wires through the strain-relief holes. Then solder the red wire to + and the black wire to -. Use the double-sided adhesive foam to attach the board to the battery box.

Step 14 — Install the microcontroller chip.

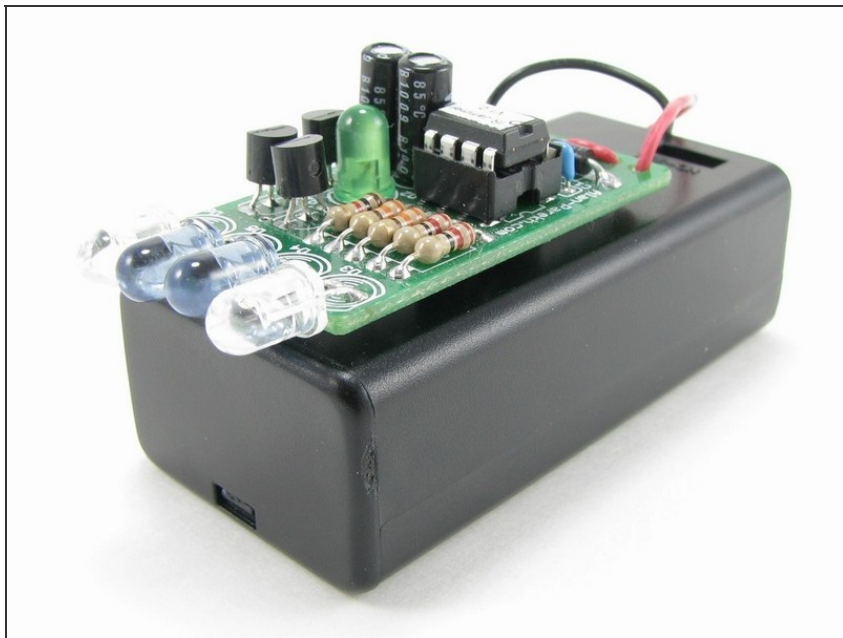


- Install the 8-pin microcontroller chip. There is a notch on the chip which needs to be aligned with the notch on the PCB silkscreen and socket. The leads may need to be bent in slightly to allow it to seat in the socket properly. To bend the leads, gently press all four leads against a table to bend them in slightly. Repeat this for the 4 leads on the opposite side. Gently press the chip pins into the socket.

Step 15 — Wire up a remote activation button.

- Beside the push button switch are two contacts labeled "On Sw." If these contacts are shorted the jammer will turn on until the short is removed. This means that the "On Sw." contacts can be extended to a N/O (normally open) remote switch. This remote switch can allow the unit to be mounted into something like the brim of a hat and have a switch in your pocket, for example. You could also use the remote switch to connect it to the device that the jammer is hidden in. For example, if it was hidden in a real remote control a switch in the remote could be wired to the remote switch to turn it on.

Step 16 — Use the IR Jammer.



- The IR Jammer control module was designed to be the same size as a 9-volt battery since this is a power source that is ideal for this small handheld device. When power is applied the green light should blink a few times to let you know that the system is alive.
- Using the IR Jammer is simple. Just point the bank of 4 IR LEDs towards the remote-controlled item you want to jam, for example a TV or stereo, and press the push button. The jammer will send out the jamming signal for 30 seconds and then automatically turn off. Each time the button is pressed 30 seconds is added to the internal "on" timer, so if you need 2 minutes just press the button 4 times.

This project appeared in [Make's School's Out](#) special issue.

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